cess of Natural Selection from those simple forms which propagate by cell-multiplication or spontaneous fission.

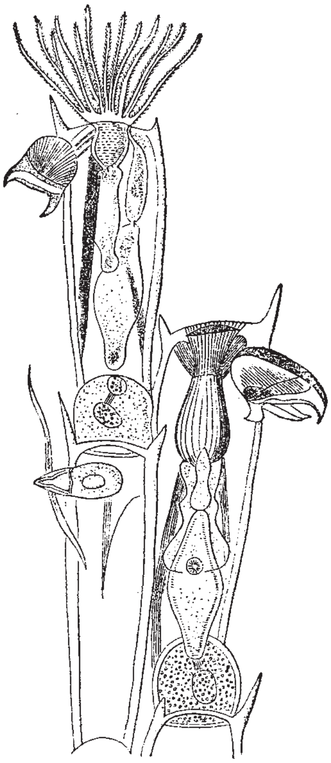

FIG. 4.—A Polyzoon with Bird's-head Processes.

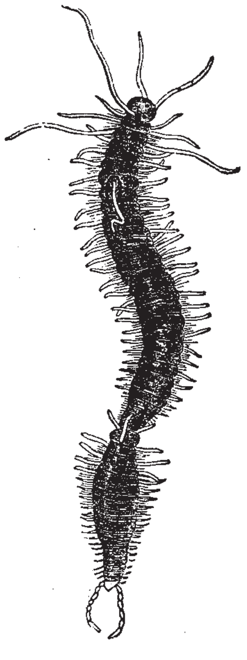

FIG. 5.—An Annelid dividing spontaneously.
(A new head having been formed towards the hinder end of the body of the parent.)

We have not space to enumerate all our author's arguments, for which we must refer our readers to the volume itself, wherein even those who differ from his conclusions will find a mine of physiological information and ingenious speculation. Nor can we do more than allude to the theological portion of the work, wherein he ably defends the doctrine of Evolution against both the *odium theologicum* and the *odium antitheologicum*.

The present state of the argument we take to be this :—The theory of Natural Selection, in the hands of Mr. Darwin and Mr. Wallace, afforded a simple, a beautiful, and a valid solution of the origin of a large number of the organic phenomena by which we are surrounded ; by many disciples of Mr. Darwin it has been assumed, perhaps too rashly, as adequate to account for the entire evolution of all the existing forms of animal and vegetable life from one or a few primordial germs. To this idea, so seductive in its very simplicity, a number of more or less cogent objections have now been urged. It is possible that on still closer examination, these objections will be found to break down ; but in the meantime we must suspend our judgment ; and in order to save defeat, the next move must be made by the advocates of Natural Selection, a *primâ facie* case against them having at all events been made out. Mr. Mivart has no counter theory to propose, beyond a belief that there exists in all organic life an innate power analogous to intelligence, which controls their actions as reason does those of men. Should the inquiries which are now being energetically pursued on every side result in our acquiring more accurate knowledge of such a force, it will be safe to predict that to it will then be ascribed a more easy and natural solution of many phenomena which we are now forced to attribute to Natural Selection.

ALFRED W. BENNETT

NOTES

THE Royal Commission on Scientific Instruction and the Advancement of Science is about to resume its sittings, and meetings will be held at 6, Old Palace Yard, Westminster, on Thursday, February 9 ; Friday, February 10 ; Monday, February 13 ; Tuesday, February 14, at 11.30 A.M.

IN the recent changes which have taken place in the Royal Mint by the deaths of Professors Graham and Miller, Dr. Stenhouse, F.R.S., lost his position as Non-resident Assayer to the establishment. Several of our leading chemists, including Sir Benjamin Brodie, and Professors Williamson, Frankland, and Odling thought that this was an opportunity for recognising the services which Dr. Stenhouse had rendered to chemistry by his numerous researches, and they requested Dr. Lyon Playfair, M.P., to bring his claims before the Premier. We have now the gratification to announce that the representation has been successful, and that Her Majesty has directed that a pension on the Civil List of 100*l.* should be given to Dr. Stenhouse "in consideration of his scientific attainments."

THE shelling of Paris has been disastrous to M. Desnoyers, the librarian of the Museum, who lost his son by it. The celebrated Abbé Moigno, editor of *Les Mondes*, was slightly hurt by the breaking of a glass, from an explosive shell. The private apartment of M. Milne-Edwards was visited by a shell which has done much harm to the valuable furniture. Another shell penetrated into the Gallery of Zoology and caused much damage to the glass-work ; and again another into the Gallery of Mineralogy, in the very place where M. Daubrée performs his experiments on artificial meteors ; but happily it had exhausted its force, and did but little harm. Many instances of this description have occurred, where shells were sent to their utmost range, and did not explode under such circumstances. The reverse has however been observed, for one shell falling in the Seine with great force, the water offered resistance like a solid body, and explosion took place : the effect was curious. A shell fell in the courtyard of the Collège de France when M. Levavasseur was lecturing on political economy, and the young professor was not disturbed by the projectile, portions of which broke through the windows. He continued lecturing, saying, "Those who fear such things have only to leave the place."

THE addition to the building for the Museum of Comparative Zoology at Cambridge, at an expense of upwards of 60,000 dollars, is rapidly going on. Prof. Agassiz has returned to Cambridge with restored health, and with new plans for the enlargement of his museum. Prof. O. C. Marsh, of Yale College, has just returned with his party from the Rocky Mountains.

THE *Indépendance Belge*, in its number for January 9, publishes an extract from the *Comptes-rendu de l'Académie des Sciences*, in which M. Elie de Beaumont describes the experiments used in directing the course of the balloon which fell at Rheims. In accordance with what was said in one of our recent numbers, M. Elie de Beaumont, who had witnessed the ascent, explained to his colleagues that the wind was bearing to the East, but that owing to the deviation the balloon would reach Switzerland! He was, however, most unfortunate. The captain of the directing balloon arrived recently at Lille. Experiments directed by M. Mangon have proved that a balloon 90,000 cubic metres measurement requires forty-two foot-pounds to move with a rapidity of a yard per second, which is a very important result for future experiments. The mass of gas and balloon is about three tons.

MR. J. HOPKINSON, the Senior Wrangler of 1871, is a native of Manchester. He was educated at Owens College; and at Easter 1867 obtained the Senior Mathematical Scholarship at Trinity, after open competition. In 1868 he also obtained the Sheepshanks Astronomical Scholarship. In 1867 he was awarded the exhibition in Chemistry and Natural Philosophy, at the first examination for the B.Sc. degree at the London University; and at the second examination for the same degree in the following year he carried off the Scholarship in Mathematics and Natural Philosophy. Mr. Jas. W. L. Glaisher, the Second Wrangler, is the son of Mr. Jas. Glaisher, F.R.S., director of the Meteorological Department at the Greenwich Observatory. He received his education at St. Paul's School, where he gained the first mathematical prizes in 1865, 1866, and 1867. On leaving school he entered Trinity College with a Senior Campden Exhibition. He is the author of a paper read before the Royal Society in March 1870, on the numerical value of the sine-integral, cosine-integral, and exponetical-integral.

THE Delegate Government of Bordeaux has established a Scientific Commission, presided over by M. Marié Davy, the meteorologist, and having amongst its members the Professor of Analysis at the Polytechnic School of Paris, M. Silberman, Head of the Physical Laboratory at the Collège de France, and some local scientific celebrities.

M. LEVERRIER is said to be hiding in a country place near Marseilles, assuming a false name, and living like a private man with one of his intimate friends.

M. THÉNARD, a member of the French Institute, who had retreated to his home on the Côte d'Or, was taken prisoner and sent to a fortress in Germany as a hostage. The President of the French Institute has protested against the arrest. M. Thénard is the son of the celebrated Professor of Chemistry, and belongs to the agricultural section. He is a landed gentleman of considerable property.

THE elephants and other animals of the same description at the *Jardin des Plantes* were sacrificed to the necessities of the war. Members of the French Institute were present on the spot in order to witness the effects of the shots on the huge brutes, and some parts of the body were set apart for careful dissection. M. Milne-Edwards has taken advantage of the circumstance to prepare a paper, which must have been already presented to the French Institute, and which will create a sensation in the scientific world.

DURING last session the American Congress made an appropriation of 50,000 dollars for Arctic exploration, with the promise that the scientific operations of the expedition were to be prescribed by the National Academy of Sciences. Captain Hall was appointed by the President of the United States to command the expedition in question, and a commission of the National Academy, recommended by Professor Henry, is to act in concert with him, and to prepare a manual of scientific inquiry for the use of the expedition, "which will, undoubtedly," says the *American Naturalist*, "interest a large circle of readers when published."

MR. A. HYATT has been appointed Professor of Palæontology at the Massachusetts Institute of Technology. Mr. E. S. Morse has been chosen Professor of Comparative Anatomy and Zoology at Bowdoin College, and has been appointed lecturer in the same branch at the Maine Agricultural College. Dr. A. S. Packard, jun., editor of the *American Naturalist*, is to lecture on Economic Entomology at the same institution. Mr. B. H. Emerson has recently been elected Professor of Geology at Amherst College, the chair filled for so many years by Dr. Edward Hitchcock, sen.

THE *American Naturalist* states that Dr. Hagen has recently returned from Europe, having purchased, through funds supplied by a lady in Boston, for the Cambridge Museum, a Parisian collection of weevils of great extent and value. He has also brought over his own unrivalled collection of Neuroptera. Its presence in the United States is most fortunate for this department of entomology. The same journal gives us the following additional items of entomological intelligence:—Congress is about to print an entomological report by Townend Glover, the entomologist of the Agricultural Department. It will form an exceedingly useful work, and will deserve the widest circulation. Mr. P. R. Uhler, of Baltimore, has ready for publication by the Boston Society of Natural History, descriptions of the Hemiptera of the Harris entomological collection. Gradually the unpublished results of the labours of Dr. T. W. Harris are being given to the public.

MR. J. A. M'NIEL, who has made two expeditions to Central America, is now in Philadelphia preparing for a third archæological excursion to Nicaragua.

IN the number of the *Quarterly Journal of Education* for January is a short article on school books, in which occur the following remarks, which we commend to the notice of those interested:—"The vast majority of elementary works are written specially as aids to assist the student in cramming a certain specified subject, so that he shall be able to pass some particular examination. Now every examination differs to a certain extent from any other examination, and text-books are therefore required to point out and elucidate these differences. For example, one is told that it is almost imperative to use Buckmaster's Chemistry in preparing for the science examinations, whilst Miller's, Williamson's, Gill's, or Barff's works upon the subject, although admitted by competent authorities to be the best of their kind, are kept in the background. On the other hand, in preparing for the London University examinations, it is better to use the latter works. . . . Frequently, again, an examiner writes and publishes a text-book, and, of course, he has a predilection for the peculiarities of his own offspring; and, by so framing his questions that a knowledge of *his* book is necessary, he increases its sale, and thereby the balance at his banker's." Without subscribing to the inuendo contained in the last sentence, we think the *Journal* here points out a weak place in our examination-system. Great complaints are made—and these do not come from rejected candidates—that the mode in which questions are sometimes put at these examinations renders them impossible to be answered clearly by any student who has not been trained in the particular school of the examiner, though he may possess a competent knowledge of the subject. This is a great evil, and ought to be looked into.

WE have received the first four numbers of what seems likely to be a very useful series of publications issued by authority of the University of New Haven, Connecticut, and termed "The University Series." Two of these are reprints of the well-known English treatises :—Prof. Huxley "On the Physical Basis of Life," and Dr. Jas. H. Stirling "As Regards Protoplasm, in reference to Prof. Huxley's Essay." The remaining two comprise Prof. Cope's essay "On the Hypothesis of Evolution, Physical and Metaphysical;" and Prof. G. A. Barker of Yale College "On the Correlation of Vital and Physical Forces."

A RECENT number of *L'Illustration Horticole* contains an interesting paper on the Botanic Gardens of Kew, by M. André, prefaced by some details regarding similar establishments in Europe. From this it appears that the first was established at Padua in 1545, followed by that of Pisa; those of Leyden and Leipzig date respectively 1577 and 1579. The Montpellier garden was founded in 1593, that of Giessen in 1605, of Strasburg in 1620, of Altorf in 1625, and of Jena in 1629. The Jardin des Plantes was established in 1626, and the Upsal Garden in 1627; that of Madrid dates from 1763, and that of Coimbra from 1773. At the end of the eighteenth century, according to Gesner, more than 1,600 kindred establishments existed in Europe. England comes late in the list, the Oxford Garden not having been founded until 1632, and long remaining the only one in the kingdom.

WE learn from the *Scottish Naturalist* that the work of fitting up cabinets for the reception of the Natural History collection in the Paisley Museum is rapidly approaching completion; and that the opening is expected to take place shortly. The geological and botanical specimens are mostly, if not all, British, and will form a valuable reference collection for students. The large and valuable reference library will contain a choice selection of scientific works.

THE revenue cruiser *Moccasin*, according to the *Technologist*, has been supplied with a new marine drag, that is, one of those substitutes for an anchor which will, it is said, effectually prevent a ship's drifting even in the heaviest weather. The success of experiments made and reported to the Treasury department has caused a contract to be made with a New York firm for the construction of several of these marine drags; and it is the intention to supply all vessels in the Revenue service with them. To vessels off a lee shore, in stormy weather, the marine drag must be a most desirable protection against shipwreck.

SINCE the American publishers abandoned the reprinting of the *Chemical News*, our American friends, says the New York *Technologist*, "have no resource but to subscribe for the original London edition. We do not regret this. What they lose in cost they more than gain in neatness and accuracy, and also in the fact that they do not have to wait a month for their news."

MR. ANDREW MURRAY has published in the *Field* some remarks upon eight samples of honey which have been forwarded by M. de Solsky, of the Agronomic Museum of St. Petersburg, to the South Kensington Museum. The honey was produced by bees fed in districts where there was a great preponderance of the following plants :—*Reseda odorata* (mignonette), *Tilia parvifolia*, *Dracocephalum moldavicum*, *Carduus nutans*, *Fagopyrum esculentum* (buckwheat), *Epilobium angustifolium*, *Echium vulgare*, each plant being represented by one of the samples. The eighth consisted of honey flavoured by the herbs of the Steppes of Central Russia, and this was the best of all in taste. Next came that from the mignonette, then that of the lime-tree; the buckwheat honey being beyond question the worst.

ONE of the most interesting and important trees of Sumatra is the Camphor-tree, *Dryobalanops camphora*. This camphor attracted the attention of the earliest voyagers, and was then, as it is now, an important article of commerce with China and Japan, the people of those countries attributing to it extraordinary virtues and paying a high price for it. The tree grows to a height of 100 or 130 feet, and forms a trunk 7 to 10 feet in diameter. The quantity of camphor contained in the trunks is very unequal, the young trees appear to contain little or none. It is said that, on an average, about nine trees are required to produce 100 lbs. weight of crystallised camphor. It is obtained by cutting down the tree and dividing the wood into small pieces, in the divisions of which the camphor is found. It differs in the form of its crystals from the camphor of commerce, is harder, more brittle, and does not so readily condense. Great quantities are used by the Bataks for the preservation of the corpses of their chiefs. The trees are spread over a portion only of Sumatra and Borneo, and generally occur in localities into which commerce and civilisation have as yet but little penetrated. Notwithstanding the continued destruction of the trees, for the sake of procuring the camphor, no means are taken for the future preservation of the species. This camphor is seldom seen in this country, except in museums. The Chinese eagerly buy it in preference to the ordinary camphor—their own produce—which they send in such large quantities into the European markets.

THE habit of branching among palms, though constant only in the Doum palm (*Hyphæne thebaica*) of Egypt, is not uncommon in other genera, and notably amongst Palmyras (*Borassus flabelliformis*) and Cocoa Nuts, (*Cocos nucifera*), figures and descriptions of which have been published in the Linnean Society's Transactions. According to a correspondent in Ceylon, branching Cocoa Nuts, Palmyras, and Arecas, are to be seen there in plenty, besides other curious freaks of the Cocoa Nut, such, for instance, as the growth of two or three trees from one nut. In the Racket Court at Colombo, we are told that five trees are now flourishing (or at least were at the time the letter was written) which have proceeded from the same nut. Originally there were eight in all, but three have died, probably by the nourishment being drawn away from them for the sustenance of the other five.

THE use of the fruits of *Taughinia venenifera* in Madagascar as an ardent poison is of great antiquity, and is one of the still remaining superstitious customs ardently believed in by savage nations. The system of administering the poison has been often told, but the following account from a private letter of an eye-witness differs in so many points from those we have before read that we give it entire. The fruit was taken, bruised, and boiled whole. A fowl was boiled, and the broth set aside. Three pieces of the skin of the fowl were cut and put into the broth; a cupfull of poison was first administered, followed by another of the broth containing the three pieces of skin. If vomiting did not speedily set in, the poison soon killed, but if it did, it was kept up by constant exhibition of the broth and warm water until the three pieces of skin were ejected. Should the skins obstinately remain, it was held as evidence of guilt, and another dose of the poison was administered.

SOME discussion has taken place in Indian circles on the authenticated, but unprecedented, fact of a tigress having been shot near Octacamund, by Colonel Christie, while she was forty feet from the ground in a tree. Many observers state that a tiger when in danger, and at the foot of a tree, does not take to a tree, and in the inundations only gets on to the lower branches. A leopard does take to a tree.